

25. Install the first gear so the splined portion of the inside diameter is toward the end of the shaft (**Figure 22**).
26. Install the washer (**Figure 23**) so the rounded edge is toward the gear as shown in **Figure 11**.
27. Set the countershaft aside until transmission is installation (Chapter Five).

REVERSE IDLE GEAR ASSEMBLY

Removal/Installation/Inspection

Remove and install the reverse idle gear assembly (**Figure 24**) as described in *Crankcase and Crankshaft* in Chapter Five.

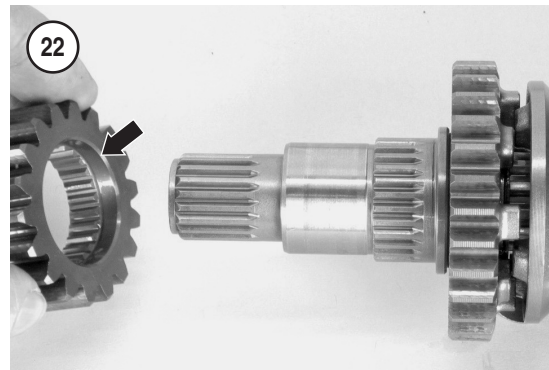
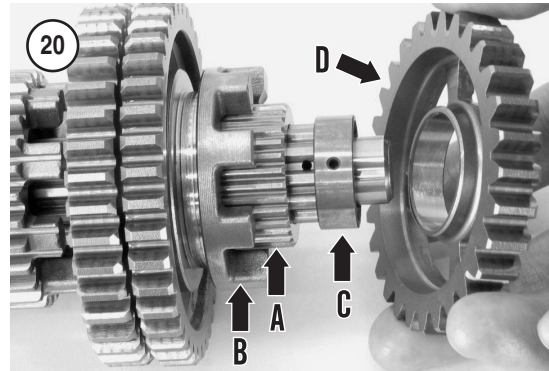
Inspect the reverse idle gear assembly as described in *Transmission Inspection* in this chapter.

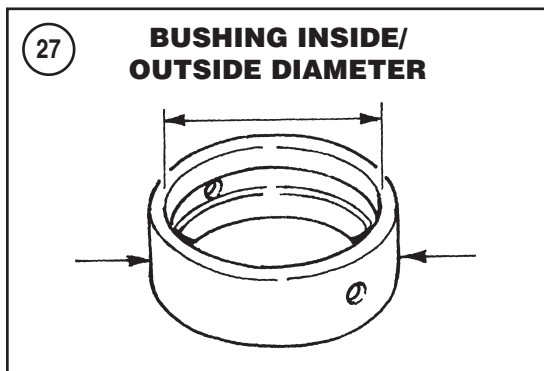
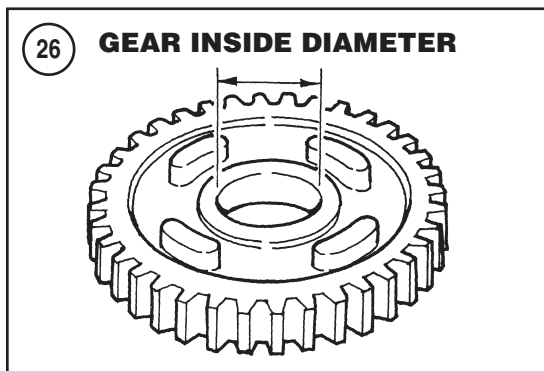
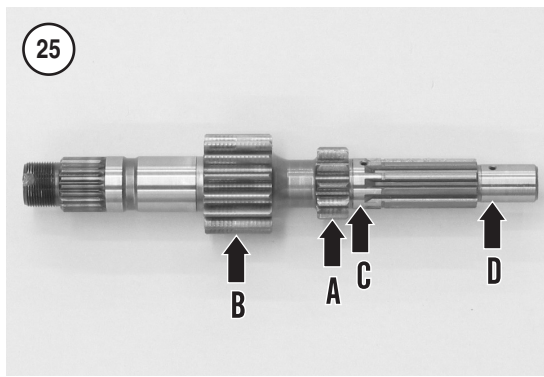
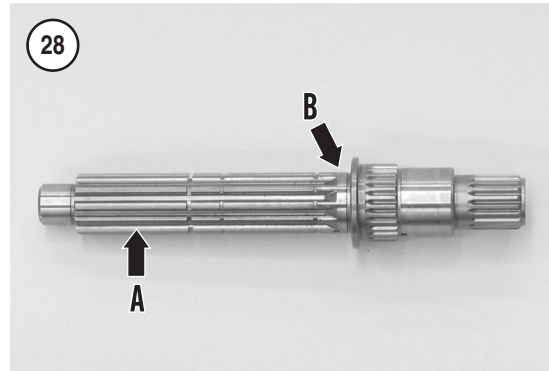
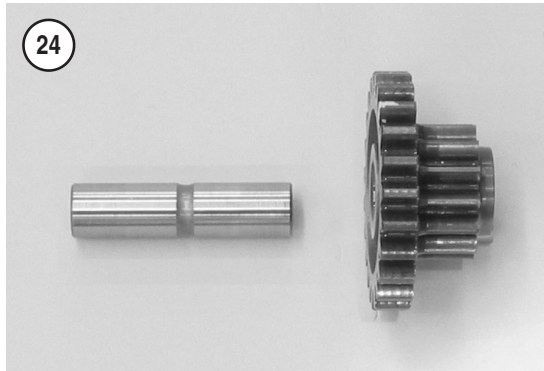
TRANSMISSION INSPECTION

Mainshaft

Refer to **Table 2** when measuring the mainshaft components (**Figure 3**) in this section. Replace parts that are out of specification or damaged. When replacing a gear, also replace its mating gear, even though it may not show as much wear or damage.

1. Clean and dry the mainshaft assembly.
2. Inspect the mainshaft (**Figure 25**) for:
 - a. Worn or damages splines.
 - b. Missing, broken or chipped first (A, **Figure 25**) and second (B) gear teeth.
 - c. Excessively worn or damaged bearing surfaces.
 - d. Cracked or rounded-off snap ring groove.
3. Check each mainshaft gear for:
 - a. Missing, broken or chipped teeth.
 - b. Worn, damaged or rounded gear lugs.
 - c. Worn or damaged splines.
 - d. Cracked or scored gear bore.
4. Check each mainshaft bushing for:
 - a. Excessively worn or damaged bearing surface.
 - b. Worn or damaged splines.
 - c. Cracked or scored gear bore.
5. Measure the mainshaft outside diameter at the fourth (C, **Figure 25**) and fifth (D) gear operating positions and record the dimensions.





6. Measure the mainshaft fourth and fifth gear inside diameters (**Figure 26**) and record the dimensions.

7. Measure the mainshaft fourth and fifth gear bushing inside and outside diameters (**Figure 27**) and record the dimensions.

8. Using the dimensions recorded in Steps 5-7, determine the gear-to-bushing and bushing-to-shaft clearances.

7

Countershaft

Refer to **Table 3** when measuring the countershaft components (**Figure 11**) in this section. Replace parts that are out of specification or damaged. When replacing a gear, also replace its mating gear, even though it may not show as much wear or damage.

1. Clean and dry the countershaft assembly. Flush the oil holes with compressed air.
2. Inspect the countershaft (A, **Figure 28**) for:
 - a. Worn or damaged splines.
 - b. Worn or damaged bearing surfaces.
 - c. Plugged oil holes.
3. Check each countershaft gear for:
 - a. Missing, broken or chipped teeth.
 - b. Worn, damaged or rounded gear lugs.
 - c. Worn or damaged splines.
 - d. Cracked or scored gear bore.
4. Check each countershaft bushing for:
 - a. Worn or damaged bearing surface.
 - b. Worn or damaged splines.
 - c. Cracked or scored gear bore.
5. Measure the countershaft outside diameter at the location of the third gear (B, **Figure 28**) and record the dimension.

6. Inspect the reverse shifter for worn, damaged or rounded gear lugs. Check the splines for severe wear or damage.
7. Inspect the shifter collar and collar for excessive wear or damage.
8. Measure the countershaft first, second, third and reverse gear inside diameters (**Figure 26**) and record the dimensions.
9. Measure the countershaft first, second and reverse gear bushing outside diameters (**Figure 27**) and record the dimensions.
10. Using the dimensions recorded in Step 8 and Step 9, determine the gear-to-bushing clearances.

Reverse Idle Gear

Refer to **Table 4** when measuring the reverse idle gear components (**Figure 24**) in this section. Replace parts that are out of specification or damaged.

1. Clean and dry the reverse idle gear assembly.
2. Check the reverse idle gear shaft for:
 - a. A loose or damaged pin.
 - b. Cracked pin hole.
 - c. Cracked or damaged bearing surfaces.
3. Check the reverse idle gear for:
 - a. Missing, broken or chipped teeth.
 - b. Cracked or scored gear bore.
4. Measure the reverse idle gear shaft outside diameter and record the dimension.
5. Measure the reverse idle gear inside diameter and record the dimension.
6. Using the dimensions recorded in Steps 4 and 5, determine the gear-to-shaft clearances.

INTERNAL SHIFT MECHANISM

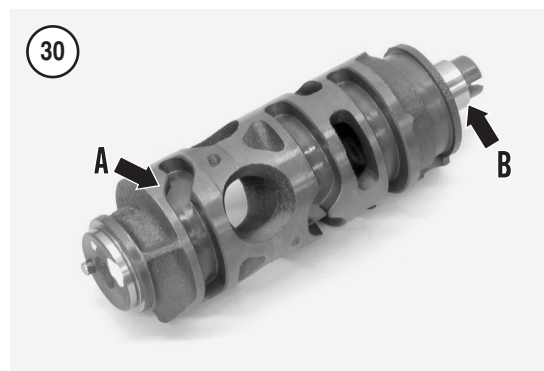
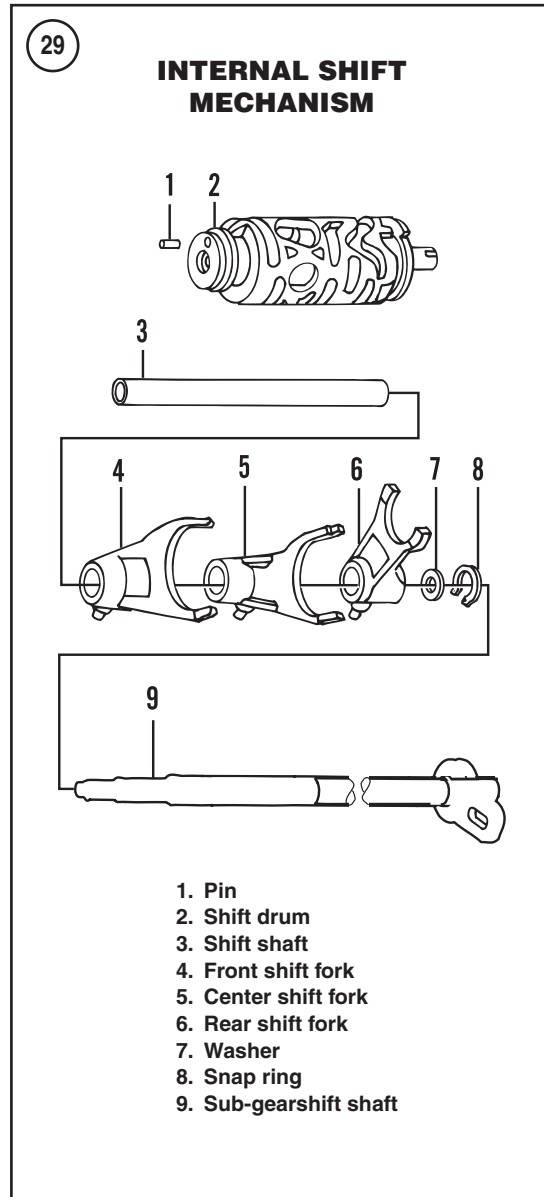
Refer to **Figure 29** when performing the following procedures.

Removal/Installation

Remove and install the transmission assembly as described in *Crankcase Disassembly and Crankcase Assembly* in Chapter Five.

Shift Drum Inspection

1. Clean and dry the shift drum.



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